Phil Marshall

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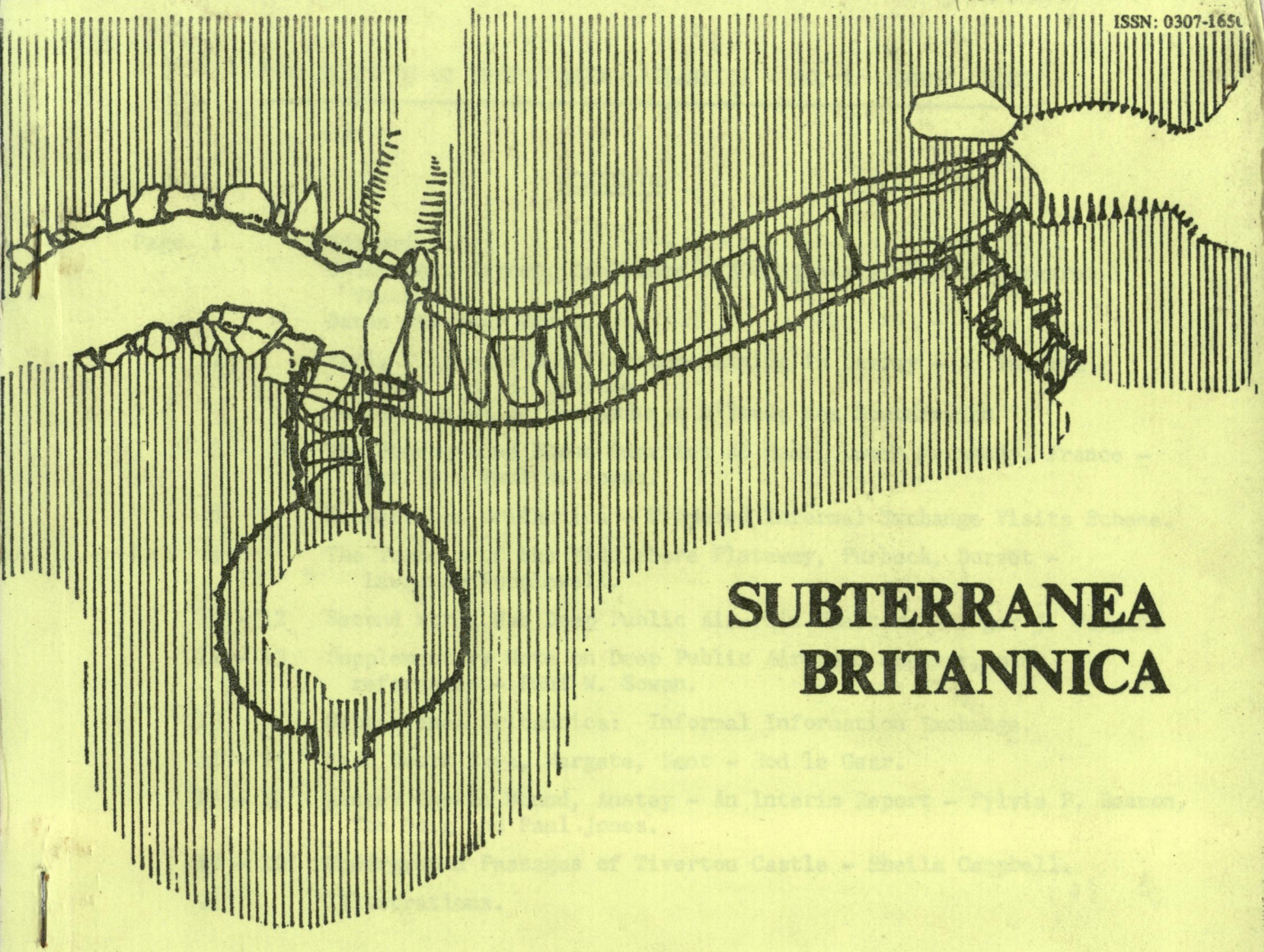

SUBTERRANEA BRITANNICA

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THE BULLETIN OF SUBTERRANEA BRITANNICA - NO. 16 AUGUST, 1982

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Subterranea Britannica is in association with Société Française D'Étude des Souterrains of France, Arbeitskreis für Erdstallforschung of Germany and La Société Bèlge D'Étude des Souterrains of Belgium.

Bulletin compiled by Sylvia P. Beamon with assistance from Paul Sowan, Tom Doig and Rod le Gear.

EDITORIAL

Yet again, another triumph for our Society with a varied and stimulating Study Weekend held at the end of June in the Nottingham area. Our grateful thanks to all concerned.

The Spring Outing was also an unexpected success arranged Roger Morgan with visits underground to the Post Office Railway and King William Street Tunnel in London. Numbers for this activity in previous years had dropped off, therefore an Informal Exchange Visits Scheme has been proposed (see page 8). Please send in your views on the new proposal and whether we should discontinue the Spring Outing.

SUBTERRANEA BRITANNICA CONFERENCE REPORT, CAMBRIDGE - 30 JANUARY 1982

Margaret Walker

Underground transport in Surrey Mines

Mr. Bruce Osborne gave a most interesting talk on the earliest known English railway system before the age of steam when horsepower was used. The purpose of the system was to carry stone (of not very good quality) from quarries of Merstham to the Medway and London, and by his investigations he showed that the line was more extensive than was originally thought, as pieces of flanged plate rails, probably made by the same ironmaster, have been found at Godstone Hill. Due to vandalism and other depredations, the evidence is fast disappearing - e.g. a stock of eighty pieces of plateway, each approximately three feet (1 m.) long and weighing 35 - 40 lbs. (15 - 19 kilos) carefully stacked in an urban garden.

Iceland's Underground Structures

Mr. Paul Sowan related details of his thirteenth journey to Iceland these were accompanied by slides almost all of which showed the volcanic layers of the terrain. He has found no evidence of actual mining as such. Some cavities provide heated bathing 'chambers' (if not too dangerous) others enable spar (calcite) to be extracted without going to any great depth. Coal of very poor quality and in very narrow seams is difficult and hazardous to mine. Mr. Sowan also brought a number of 18th and 19th Century books on Iceland which were of great interest to many present.

In the afternoon Miss Maureen Mahony provided further information on the man-made cave system below the city of Nottingham and this was accompanied by excellent slides. One cellar in particular aroused a discussion at the meeting as to whether the skeleton of a dog was either a ritual burial or the interment of some man's faithful friend, obligingly dated by a coin of the first half of the 15th Century seemingly dropped as the dog's body was laid to rest in the grave. In the following century, tanning vats were constructed in the same cave - which may have been enlarged for that purpose.

Mrs. Sylvia Beamon gave an account of the International Symposium at Villeneuve-sur-Lot, France in July 1981, and she also gave the latest information upon the investigations at Anstey - adding an appeal for donations to finance the construction there of a coffer dam in the moat during the Spring/Summer of 1982.

DATES FOR YOUR DIARY

16 October, 1982 - Subterranea Britannica Day Conference, "Strathaird", Lucy Cavendish College, Lady Margaret Road, Cambridge, 10 a.m. - 4.30 p.m.

22 - 24 October, 1982. Course on Minerals Rocks and Fossils at the Peak National Park Study Centre. Write to: Peter Townsend, Losehill Hall, Castleton, Derbyshire, Tel: Office: Hope Valley (0433) 20373; also:

19 - 21 November, 1982. Course on the Caves of the Peak District.

DATES FOR YOUR DIARY (CONT'D)

29 January, 1983 - Subterranea Britannica Day Conference, Cambridge.

February 1983 - The International Committee for the Conservation of the Industrial Heritage (T.I.C.C.I.H.) Belgium. Working Conference with active participation on the history and heritage of coal-mining (Conference language English). Further information from:- TICCIH-Belgium, Adriaan Lir ers, c/o Industrial Heritage Project, Begijnhof 59, B-3800, ST.-TRUIDEN, Belgium. (Tel: Belgium - 011/67 65 79).

EARLY PLATEWAYS AND FIRESTONE MINING IN SURREY - An Interim Report - B. E. Osborne. Proc. Croydon Natural History and Scientific Society 17 (3) pp. 73 - 88 1982. Cost: 90 p. in main central Croydon bookshops, or £1.15 p. by post from the Society, 96A Brighton Road, South Croydon, Surrey CR2 6AD.

This 15 page booklet presents the results of field observations above and below ground at the Merstham terminus of the Croydon, Merstham and Godstone Railway, and at the underground stone quarries at Godstone Hill. It offers important new industrial-archaeological and historical evidence on this system (1805).

It records and analyses in detail the characteristics of the 10 kinds of plate rails associated with these locations.

It presents and interprets, also some new documentary evidence having a bearing on the Merstham terminus industrial site and its developments.

It concludes that a number of internal quarry plateways, some partially subterranea, existed in the county, either in connection with the CMGR or independently. It seems quite possible that one or more of these pre-dated the CMGR by up to 10 years or so.

Exact dimensions and descriptions of plate types are given, along with an accurate illustration. And there are detailed maps of the Merstham terminus which incorporates all current knowledge of the trackway alignments and the various industrial installations, including quarry entrances and underground workings. These maps render all previously published depictions of 'the end of the line' redundant.

SOCIETE BELGE DE RECHERCHE ET D'ETUDE DES SOUTERRAINS (to be known as SOBERES)

This recently formed Belgium group has been set up to promote archaeological research into their man-made and man-used underground structures (souterrains) for example: refuges, the various pits that are found at castles (Chateaux), farms, forts, oubliettes, cisterns, crypts, also into ancient mining quarries etc.

The research is essentially to discuss the different aspects of the history, science and economics of the subject.

They are hoping to make contact with interested persons and societies in both their own country and abroad.

All correspondence should be addressed to their registered office:-

SOBERES,
Maison des Arts,
Chaussee de Hecht 147,
B - 1030 Brussels, Belgium.

THE UNDERGROUND STONE QUARRIES at CAEN, LOWER NORMANDY FRANCE : PART II

Paul W. Sowan

Continued from Bulletin 15 (1982), pages 11 - 16
The figures referred to in the text will appear in Bulletin 17

Allemagne / Fleury : Pillar and Stall Drift Quarries from the River Bank

Southwards from the Caen municipal boundary to the village of Fleury - sur - Orne there are two or three quite distinct styles of underground quarrying, with a certain amount of transition from one to another. What has every appearance of being the oldest of these is the series of pillar and stall drift quarries worked into the plateau from quarry roads running along near the top of the right bank of the river, as described by Donaldson in 1848 and W. & J. Freeman from 1808. Personal inspection of a section of these workings, and a study of the survey drawn up by the municipal Service des Carrieres (Ville de Caen, 1976 - 79), reveals over 30 drift entrances in a stretch of about 750 metres.

At the village itself, a distinct quarry separate from the others (presumably that from which stone for the village was taken) has the characteristic form of early drift quarries - a palmate layout of pillars and stalls, with some division of stalls into sub - stalls, and few or no intercommincating 'eyes' between stalls (fig. 1). Such a quarry plan is of course best adapted to haulage of stone up from each stall to the quarry mouth or mouths, with no requirement for lateral haulage within the quarry. The drifts or stalls at this quarry, according to the survey, are from 60 to 160 metres long, seven stalls being served by a cluster of five closely spaced entrances. Stall widths of 5 to 10 metres, and pillar thicknesses of 1 metre or less to 20 metres, are found. Probably many ancient quarries serving rural areas were of this primitive form. This quarry, which was not visited, was later connected, by extension of one of the drifts further under the plateau, with a more recent pillar and hall / pillar and room quarry, apparently worked from a slope - shaft, immediately to the east of the D 562 road; interestingly, its workings just avoid running under the buildings along the east side of the road.

This second quarry (fig. 2) occupies an irregular space within an area about 220 x 80 metres. It is essentially one large irregularly shaped open 'hall' with pillars from 3 metres square up to about 5 x 10 metres left apparently at random to support the ceiling; one or two irregular extensions or 'rooms' lead off from the main quarry space and, too, have pillars left in them. In the absence of any rigid grid pattern of pillars with stalls and eyes at right - angles to each other, stone from most parts of the quarry could have been hauled to the foot of the slope shaft without the need for sharp turns. I have relied on the survey for information about this quarry, too.

A third quarry, quite distinctive again, was visited, and examined, in some detail. Here the picture is of numerous drift entrances, 20 or so, communicating with stalls running from 60 to 210 metres into the hill, although the galleries closest to the city boundary extend, through a contrasting section of workings, to 350 metres. Although there is some degree of inter - connection between the majority of these drifts (although generally not in the first 120 metres or so), this quarry is revealed by the survey to have three different zones of distinctive development; it, also, connects at three points with a further, larger and newer slope - shaft pillar and hall quarry under the plateau, described below. The southernmost six or seven entrances communicate with a series of two or three palmate pillar and stall quarries worked on a very irregular plan. Some of the pillars, only 2 - 3 metres thick, have been cut through by numerous closely spaced eyes; others, up to 25 metres thick in places, have had rooms up to 10 x 40 metres excavated within them (fig. 3). The next half - dozen entrances lead into almost parallel drifts or stalls 5 - 10 metres wide, with 1 - 5 metres thick. Some 140 metres in, cross - connections or eyes appear, and for the remaining 50 or 60 metres or so

the pillars are reduced to fragments from 3 metres square to 3 x 20 metres. In this central part of the third quarry, because of the thinness of many of the pillars, accidental openings were sometimes made between stalls, rather than deliberate eyes to win stone or facilitate intercommunication. The full height of the working faces is about 4 - 5 metres, and it is clear that multi-stage working, or stepped-bench working, was employed, as some windows and stacked 'deads' at high level testify. Soot-marks on the ceilings, part-worked blocks, tool-markings all point to the working or very large blocks of stone, up to 1m^3 Ones first impression on exploring these drifts is of a steadily increasing ceiling-height with distance into the hill. However, closer inspection revealed that deads had been stacked and levelled on the drift floors from the entrances almost as far as the working faces The thickness of deads was estimated to be from 1 to 3 metres. Much of these deads resulted from the method of working to a sound ceiling. The stratum of stone selected to act as roof-stone lies about 1 metre above the fine building-stone. The intervening metre of inferior limestone was hacked-out and discarded This of course made it far easier for the quarryment to reach from the face to cut the back of each block. Picks exclusively, rather than saws, were used, and this too contributed to the quantity of deads left in the quarry. Typical examples of plan and section in this area are given in fig 4.

The last part of the third quarry, lying closest to Caen, was not visited as much of it appears to be walled-off for use as a mushroom farm. The survey shews that it closely resembles the area just described, except that the pillar and stall working with extensive development of eyes (likewise only after 140 metres) extends not a further 50 - 60 metres, but a further 180 - 220 metres. The plan of this inner section is still recognizably developed from a more or less palmate arrangement of long thin pillars, subsequently broken up into smaller columns, and stalls. The eyes yielded additional stone, but there would have been little or no requirement for lateral haulage (fig 5.) The three areas of quarry III are developed in areas of approximately 180 x 100 metres, 100 x 200 metres, and 120 x 350 metres respectively. Areas 2 and 3 merge about 140 metres in from the entrances, and here and from area 3 there are connections through to Fleury's fourth, largest and final quarry to be described. To the north of quarry III are further workings, partially surveyed, including some apparently resembling III(3) and at least one 'shaft and room' quarry of a kind to be described below from the La Maladrerie district.

Allemagne / Fleury : Hall and Column Quarry under the Plateau

There is no doubt this is much the most recently worked of the quarries at Fleury. Presumably when quarry III(3) had extended so far under the plateau as to require haulage for up to 350 metres through the older workings to the river bank entrances, the decision was taken to create a new quarry worked differently. This was served by an impressive slope-shaft from a farm trackway called the Chemin de Cormelles on local street-maps, east of the village and D 562. The slope-shaft penetrates some 8 - 10 metres of worthless limestone and subsoil overburden, and leads into an underground quarry occupying an approximetly parallelogram-shaped area of about 70,000 m^2. This is almost entirely one vast open hall, with usually quite small columns of natural stone (usually 3 to 5 metres square) left as roof supports; a small fraction of these columns are larger or of more irregular shape. The columns are generally laid out in a very regular, rectilinear fashion. Such a plan of course necessitates a relatively elaborate system for underground haulage, and trackbeds and rails of light narrow-gauge railway were indeed observed in places, although these may well have been related to secondary use of the quarry, mentioned below. Inside the slope-shaft marks in the floor seemed to bear witness to standard-gauge railway lines, although the way out is far too steep to be negotiated by a locomotive and no trace of a stationary winding engine could be seen at the top. The ceiling height throughout this quarry was of the order of 6 - 8 metres, with roof-spans between columns of 4 - 7 metres. In the south-east corner a great deal of water was seen dripping in through the ceiling, and there was extensive flooding. However, the almost negligible easterly dip ensures that nowhere is the water very deep (it is probably wadeable throughout) and in any-case banks and trackways constructed of deads allow access throughout the workings. Deads are stacked almost to the roof in some areas, but generally they are conspicuous by their absence. Indeed it was clear on inspection that

there has been secondary working in the form of excavation and removal of deads and probably also of floorstone in parts of the quarries. There has also been opencast quarrying on the plateau surface above, and at least one such openwork has cut into the underground quarry (it is now being filled with domestic refuse.) Presumably this secondary working was for lime for use in the iron-furnaces at Colombelles, where the Societe Metallurgique de Normandie operates at the end of its private freight-only railway 'Chemin de Fer Minier de Soumont-St. Quentin' from its iron mines.

In the quarry the columns were observed to taper, being wider at the bottom than at the top - the reverse of what is seen in the Bath stone mines at Box (Wiltshire.) All primary working, so far as could be seen, had been by pick, although evidence was found on loose blocks for the use of saws.

There was also some evidence of use of the quarry for refuge during World War II. During the liberation bombardments of June 1944, Duncombe (1977) tells us, the quarries at Fleury offered shelter for more than 15,000 people. In a part of the north-eastern corner of the quarry there is a series of weirs and settling tanks which conduct, probably, storm water (the flow observed was negligible during the visit) via an adit through un-quarried ground and a deep canal made through the north-western part of the quarry and ultimately to a tunnel, which was not explored, leading towards the Orne. These works are not shewn on the survey. The inflow to this draiange system was from a steeply sloping, crudely cut tunnel which, likewise, was not explored. A small part of quarry IV is depicted in fig. 6.

La Maladrerie : Shaft and Room Quarries

La Maladrerie is a suburb of Caen on the road to Bayeux (N 13), wast of the city. Much of this area is undermined by extensive areas of quarrying of a completely different kind, best described as 'shaft and room', or 'shaft and room with columns'. At its simplest, this form of quarry is no more than a square shaft (usually about 3 metres square) sunk vertically through the overburden to the fine stone, where workings were extended for from 10 to 40 metres from the bottom of the shaft. The distance worked seems to have depended partly on the need to leave sufficient support for the roof, and partly on the greatest distance blocks of stone could be conveniently hauled by chains from the working faces and up to the surface. A relatively long, narrow room allowed adequate support, but made stone haulage more difficult -- our guides from the Service des Carrieres here thought primitive log rollers might have been used, but we saw no evidence of this. More ambitious quarries of this kind were somewhat larger, say 40 x 50 metres, and had 3-4 metre square columns left at intervals for support. A selection of quarries of this kind is shewn in fig. 7.

The development of this system of quarrying to the point where adjacent surface plot-holders' quarries adjoined and at times intercommunicated was shewn to us during the course of a visit kindly led by M. R. Mathias, Technicien Principale to the Service des Carrieres. Here large rooms were created, one to each haulage shaft, of the order of 30-40 metres by 50-60 metres, extending the whole way under, it seemed, surface property plots and related to property boundaries and road alignments. Each such room has 15 or so columns left to support the roof. Adjacent quarries approached each other very closely, so much so that often an accidental 'window' was made from one to another at an early stage of working the uppermost beds of stone. Naturally, when the full depth of stone had been worked these windows were left close under the ceiling, several metres above floor level. Sometimes adjoining quarries were clearly deliberately linked at floor level. As noted at Fleury, the quarryment removed and discarded $\frac{1}{2}$-1 metre of stone as rubble which occurs between the top of the good-quality stone and below the roofstone. This rubble was dumped as deads in irregular heaps, and it is chiefly on account of these allowing access via the high-level windows between quarries that an extended tour can be made. Again, no evidence of sawing of stone was seen - all working had been by picks and wedges. Ceiling heights in these quarries vary from 3-4 metres to 9-10 metres. Graffiti from 1820 through to 1890 were observed, and notes on the Service des Carrieres' survey refer to plans dated predominantly in the 1850s City's archives. In one area there are extensive straw stalactites up to 7 cm long, with

some calcite deposits also on the floor and deads. There is no evidence of any flooding, the water table being some 50 metres below quarry floor level in this area.

The entrance shafts, of which at least 95 are surveyed, are mainly closed at the top by dry-stone arches with ½ metre of soil on top; such covered shafts can occur at intervals of every 25-50 metres or so! The Service des Carrieres maintains an inspection access and depot in this district, and records signs of impending subsidence so that remedial action can be taken in advance - a refreshing contrast to the English method of coping with disused mines, which at times appears to amount to little more than blocking and forgetting the entrances and hoping the problem will go away! Where additional support is needed, for example under the new motorways being built around the city, straw bale retaining walls are erected and the areas immediately at risk of collapse are then filled with expanded concrete. Again, the impression is of a more systematic, thorough and effective approach, and probably a more economical one too, than one often sees in England, where attempts are made often unsuccessfully to fill cavities completely. Fig. 8 illustrates larger shaft & room quarries

Calix

Photographs of the underground quarries at Calix held by the Service des Carrieres, and description by the staff, indicate these to be quite distinct again -- with much lower ceiling heights (from [illegible] to a maximum of 4 metres) and irregular layout. These workings were made close to the water-table and not far from the river, south of La Trinite. They are in a dangerous state of collapse, and have every appearance of being amongst the oldest and thus the most important of Caen's quarries. It appears, however, that there has been no intensive archaeological or historical study of the important part of Caen's history.

Nomenclature

Noël (1965) should be consulted for the multiplicity of technical terms recorded in France for stone, quarrying, and building. But it may be helpful here to record a few key words. A quarry (carriere) in French retains the sense it originally had in English, a place for the excavation of squared stone for building. Quarries may be underground (carriere souterraine), or openworks (carrieres a ciel ouvert); the only stone quarry still at work near Caen is the openwork carrieres de Orival, near the village Creully some 15 km north-west of Caen. Ashlar is 'pierre de taille', literally 'cut stone.' Most of the French quarries are for limestone (calcaire), though some are for sandstone (gres.) Flint or chert, not a problem at Caen, is 'silex.' A shaft is a 'puit' but, without further qualification, this could be a mine-shaft or a well.

Amongst the tools employed (of which a great many are illustrated by Noël) may be mentioned the wedge (coin), pick (pioche), crowbar (barre a mine) etc. The saw (evidently not much used if at all at Caen) is 'scie.' Interestingly various kinds of l wis (louve) have been used, as at Bath. As at Corsham (Wiltshire), however, many of the still-working French stone quarries are now highly mechanised. At the carrieres de Orival there is much sophisticated machinery for cutting and shaping stone for particular architectural purposes, giving an impression more of a carpenters and joiners works than a stone quarry!

Comparisons

Some remarks have already been published (Sowan, 1980-81) concerning similarities and differences between stone quarries in England, Belgium, Holland and France. The peculiar interest of the Caen quarries lies in their importance throughout the Middle Ages; the very wide area throughout which the stone was used (it went to Norwich Cathedral, for example, and has even been exported to North America); and the fact that it was in direct competition in south-east England with Reigate stone or firestone from east Surrey. When one compares the spacious quarries of superb stone, flat-bedded, up to 10 metres thick, at Caen one wonders why the English bothered to work the east Surrey quarries at all. At Caen there is no more waste than resulted from working by pick, there was ample ceiling height, there was no problem with inclined strata and flooding, and there was water transport available from right outside the

quarry mouths. At Merstham we find poor stone, much unusable waste, galleries one cannot stand upright in, a dip of up to 7°, serious groundwater difficulties, and a 30 km overland route to London, the main market. And throughout the Middle Ages it is known that both stones, delivered in London, were comparable in price, the overland haulage from Surrey having contributed heavily to the cost of the native product. The quation has been raised (Sowan, in press) why were the Surrey quarries worked at all? Was it a case of working them only when political relations with France made it expedient so to do? Further research on both sides of the Channel will be needed to elucidate this question. Fortunately, there is evidence that such research is now in progress.

Acknowledgements

This study would not have been possible without the assistance of a number of other people to whom my thanks are recorded. Bruce Osborne and Mavis Meredith accompanied me on my second visit to Caen. Prof. Michel de Bouard of the Centre de Recherches Archeologiques Medievales at the Universite de Caen and M. R. Mathias, Technicien Principale with the Service des Carrieres at Caen, were imm ensely helpful in France. Prof. Raymond Mauny of the Societe Francaise d'Etude des Souterrains and M. Michel Rioult of the Institut de Geologie at the Universite de Caen were most helpful in correspondence. And last but not least, Mrs. Agnes McIvor assisted magnificently with translation to and from French

Note

Part 3 of this paper, to be published in Bulletin 17, will consist of figures 1 - 8, with brief additional notes on quarry layout classification and terminology.

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SUBTERRANEA BRITANNICA - PROPOSED INFORMAL EXCHANGE VISITS SCHEME

To make mebership of Subterranea Britannica more worthwhile, your Committee proposes to encourage the arrangement of exchange visits between members having particular knowledge of and access to specific sites and areas. Members who so wish are invited to register with the Secretary details of areas and sites they would be prepared to shew to small informal groups from other parts of the country or abroad.

At the same time they should also state (1) maximum acceptable party size; (2) equipment visitors will need to bring, including any special clothing requirements (boots, boiler suit, wet-suit ...?); (3) clear statement of conditions to be expected underground, from 'easy, walk-in in everyday clothing' through 'come prepared to get very wet and muddy in tight squeezes and negotiate 70 wire ladder pitch' to 'wetsuit essential ... five hours underground minimum'; (4) relevant maps and publications for pre-visit homework; (5) suggestions (or offers) for overnight accommodation, from camping facilities to bed-and-breakfasts.

IT MUST OF COURSE BE CLEARLY UNDERSTOOD that members taking in part in such visits must do so at their own risk, and must make their own insurance, equipment and accommodation arrangements, have main and standby adequate lighting, and where appropriate make their degree of experience or lack of it underground known to the prospective leader. P.W.S.

THE TUNNELS of the MIDDLEBERE PLATEWAY PURBECK, DORSET

Lawrence Popplewell

Bertram Baxter (1966) has divided the pre-railway age in Britain into three distinct phases these being (1) tramways connected with mines or quarries and whose operators were keen to gain better access to available waterways (the early Tyneside lines were of this kind); (2) those promoted by canal companies to provide feeders for their system or to fill gaps, (3) those like the Surrey Iron Railway, a company incorporated by Act of Parliament, whose appearance as plateways for the general use of the public at large marked the final phase of tramway construction. Against this background, in which the three categories overlapped in time, Benjamin Fayle's Middlebere plateway of 1806-7 lies in the first phase. The plateway was made to facilitate the passage of ball-clay traffic from the Norden area near Corfe (Norden Clay Mines are shewn at SY 949 826 on OS 1 25,000 map Purbeck) to the Middlebere quay on the shore of Poole Harbour. Significantly, this was one of the earliest lines to be built in central southern England. And in Dorset it is by far the earliest (the Merchants' Tramway on Portland dates from the mid-1820s (Lucking, 1968.))

Fortunately, many traces of this superbly engineered route, which was 3½ miles long on gradients of 1 in 150 - 1 in 180, remain to this day -- not least many of its grander embankments and formations. There are also several extant stone sleepers in the remoter heathland sections of its gently curving alignment. The sleepers weigh 60-70 lb each. The line was built at a cost of £ 2,000 per mile, and in operation required three horses to draw 5 x 2 tons wagon 'trains.'

Most interestingly, perhaps, this plateway has also two tunnels, which lie under the Corfe-Warham road close together at about SY 955 826, about a quarter of a mile north-west of Corfe village. They were both made in 1807 Another somewhat later (c. 1850) tunnel lies under the Studland new road (approx. SY 963 826) just to the east of the London & South-Western Railway's Corfe viaduct. The two Middlebere tunnels, as evidenced by a recent field trip, remain in fairly good condition, with all four portals intact -- one is marked BF 1807 and the other, though no doubt a contemporary, has a keystoen proclaiming 'dated in 1848.' Their preservation is probably due to their well-concealed location preventing too-easy discovery, at the base of a steep embankment thickly covered in bramble and blackthorn. It seems possible that parts of the original track, 3-foot tramway plates, may still lie in the mud and indeed the Purbeck Industrial Archaeological Group intends to excavate to establish this point. The gauge of the line was 3' 9" and both tunnels are about 20 yards long. It is hoped that this research may lead to the taking of active steps to preserve these rare tunnel survivals. Documentation of these relics, not least in this present journal, should go a long way to ensure this.

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A GUIDE TO PINNER CHALK MINE

The Scabendon Club, the Pinner Local History Society and the Harrow & Ruislip Geological Society have been fortunate to secure the services of so well qualified an author as R.W. Gallois, of the Institute of Geological Sciences, for this excellently written and produced history and guide. Of 12 pages, including a map, plan and section, it is good value for 25p (+ postage) from Don Chisholm, Flat 1, Elmwood, Watchworth Lane, NORTHWOOD, Middlesex.

SECOND WORLD WAR DEEP PUBLIC AIR-RAID SHELTERS

Roger J. Morgan

A recently de-classified file in the Public Record Office (HO 205/321 Post war use of tunnel shelters) gives details of public deep shelters funded by the Home Office - either adaptation of existing tunnels or caves, or the construction of new tunnels. The total cost and numbers accommodated are given, enabling an estimate of the size to be made together with comments on their immediately post-war condition. As there is no mention in the list of Regions 2, 9 and 11 it is assumed the Home Office funded no public shelter construction underground in those regions

	COST	SIZE	COMMENTS
Region 1			
Newcastle-upon-Tyne			
Ouseburn culvert (E)	£ 11,626	3,000s	2 entrances, loose soil cover
Victoria tunnel (E)	36,000	4,000s	7 entrances, sealed with loose fill
Consett			
Colliery drift (E)	270	?	?
Loftus			
Iron mine road (E)	225	?	?
Easington			
Townfield quarry (N)	5,666	1,300s	Level entrance from road, unlined, damp
Region 3			
Mansfield			
? (N)	2,026	?	?
Nottingham			
Sneinton Hermitage (N)	2,238	?	2 tunnels unlined sandstone, 30 ft cover
Castle Rock (N)	2,739	400b	Incorporating caves. entrances sealed
Many caves (E)	25,666	?	?
Portland Road (N)	6,641	590s	2 entrances on main road, 30 ft cover
Wellington Street (N)	?	?	2 vertical entrances, under Major Street
Region 4			
Luton			
Albert Road (N) Midland Road (N) Beech Hill (N) Upper George Street (N)	73,452	8,100s	3 tunnels, bricked up
Norwich			
Caves (E)	532	?	?
Region 5			
Chislehurst Caves (E)	29,000	15,000b	Unlined chalk, 90 ft cover, some falls
Epsom			
Ashley Road (N)			Access 200 ft cutting, 30 ft cover, flooded
Epsom Downs (N)			Access 150 ft cutting
Chipstead Valley (N)	88,000	5,200b	Abandoned before completion
Coulsdon			
Brighton Road (N)			Access via cutting
Purley			
Riddlesdown chalk pit (N)			In side of chalk pit

	COST	SIZE	COMMENTS
Region 6			
Portsmouth			
Wymering Road London Road (N)	£ 73,298	5,000b	Rented to R.R. Dundas
Region 7			
Bristol			
Portway tunnel (E)	4,275	414b	?
Cliff Rocks Rly (E)	?	?	?
Clifton Down tunnel (?)	266	?	?
Warmley			
High Street Old Common (E)	375	?	?
Odland Bottom (E)	490	?	All simple
Willsbridge (?)	720	?	?
Bathavon			
Caves, Coombe Down (E)	70	?	?
Cambourne			
Tuckingmill tunnel (E)	250	?	?
Ilfracombe			
Wilder Road tunnel (E)	40	?	?
Plympton St Mary			
Hexton, Hooe (?)	805	?	?
Plymouth			
Cann tunnel (E)	11,500	1,000b	Occupied
Kerr St Devonport (E)	300	?	5 55ft tunnels
West Hoe Rec Garden Crescent (E)	793	?	?
Region 8			
Neath			
Gibbs drift, Skewen (E)	79	600p	Coal mine
Ebbw Vale/Tredegar			
Richard Thomas level (E)	?	?	2 mile tunnel
Region 10			
Birkenhead			
Tranmere (N)	134,000	4,560b 1,600s	50 ft rock cover, level entrances
Bidstone (N)	48,200	2,136b 839s	?
Stockport			
Brinksway (N) Underbank (N) Stewart St (N) Heaton Norris (N) Marden St (N)	50,704	2,635b	?
Rawtenstall			
Scout Quarry Wtrft (E)	170	?	?
Runcorn			
ICI Weston (E)	19,000	1,036b 1,600s	?

continues on next page

	COST	SIZE	COMMENTS
Region 12			
Ramsgate			
Railway tunnel (E)			
Various streets (N)	£ 56,000	33,000s	Reputedly largest system in country
Dover			
? (E)			
? (N)			
Caves : Union (E)			
Lagoon (E)			
Trevenion (E)			
Atholl Terrace (E)	24,000	10,000s	?
Barwick (E)			
Bushells (E)			
Old Mill (E)			
Winchelsea (E)			4 entrances
Guildford			
Foxenden quarry (N)	13,928	1,000b	?
Northfleet			
Rose St Arch (E)	1,299	100p	?
6 tunnels (E)		1,293p	?
Brighton			
Kemptown tunnel (E)	3,543	5,000s	?
Strood			
Whornes Place (E)	?	220p	Portland Cement Works
Snodland (E)	?	?	?
Red Lion Lane (E)	?	100p	?
Farnham			
? (E)	686	?	?
Hastings			
Caves (E)	1,637	?	?
Chipstead			
Caves (E)	?	?	Included with abandoned tunnel
Reigate			
Caves London Road (E)	2,625	?	?
Tunnel Road (E)			
Dorking			
Caves (E)	1,528	?	?
Chatham			
Manor Road (E)	15	?	Vaults

KEY

E = existing b = bunks s = seats p = persons
N = new

It can thus be seen that £ 734,659 was spent for a minimum of 109,723 people, or £ 6.70 per person, which even at 1943 prices must have been a bargain!

Subterranea Britannica or its individual members have already visited some of the sites, for example Reigate and Dorking, but the fate of the majority, I would guess, is typified by the Surrey shelters which I visited recently. Purley (Riddlesdown) at TQ 323602 is occupied by Optical Surfaces Ltd; Coulsdon (Brighton Road) at TQ 294584 is abandoned and sealed; Epsom (Ashley Road) at TQ 212596 is 'mothballed.'

SUPPLEMENTARY NOTE ON DEEP PUBLIC AIR-RAID SHELTERS

Paul W. Sowan

The Victoria tunnel at Newcastle has recently been described, with its history, in some detail -- by Rowe (1970) and the Tyne & Wear Industrial Monuments

Trust (1978). It was made under Newcastle between 1839 and 1842 to connect the Spital Tongues colliery with the Tyne, and contained a plateway, rope-worked, on a steep gradient. The TWIMT leaflet gives a conversion cost for air-raid shelter use of £ 37,000, resulting in a seating capacity for 9,000 persons.

In Nottingham the Museum Service holds a file of air-raid shelter location and layout plans. Subterranea Britannica visited the Peel Street sand mines, which were converted for shelter use, during the 1982 Study Weekend. A reconstruction of an underground second world war scene, in an actual 'cave', is a feature of the Brewhouse Yard museum.

Regions 5 and 12 are puzzling in that they appear to overlap in Surrey. The Coulsdon (Brighton Road) shelter was examined on behalf of potential users by Craig Hall & Co (1950) and subsequently occupied for a time by Cox, Hargreaves & Thomson (nd), a firm of optical instrument makers. Purley (Riddlesdown Chalk Pit) is described, with a plan, as it was in a state or dereliction in 1957 by Pearman (1963), as was Epsom (Epsom Downs) by Pearman et al (1968).

The Chipstead Valley (Region 5) and Chipstead Caves (Region 12) entries are both sites of which there now seems to be no local knowledge.

Descriptions and plans of the Reigate and Dorking shelters have been given by Pearman (1963), Pearman et al (1968) and Pearman (1976); and of the Ramsgate Harbour railway tunnel and wartime deep-shelter extensions by Pearman (1982).

Sylvia Beamon (1981) has recently reviewed the question of refuge in the second world war.

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D.J. Rowe : The Victoria Tunnel. Industrial Archaeology 7(1). 1970.

Tyne & Wear Industrial Monuments Trust : The Victoria Tunnel TWIMT. 1978.

[Copies of the Cox, Hargreaves & Thomson and Craig, Hall & Co. documents (the latter incomplete) are preserved in the Members' Library of the Croydon Natural History & Scientific Society Ltd]

SUBTERRANEA BRITANNICA : INFORMAL INFORMATION EXCHANGE

There is already a sizeable flow of notes, newscuttings, photocopies and the like between officers and committee members - anything on icehouses to Sylvia Beamon, London sites to Roger Morgan, deneholes and chalk mines to Rod Le Gear, underground quarries and miscellaneous mines to Paul Sowan, canal and railwau tunnels to Phil Marshall, sally-ports to Alan MacCormick etc. The Committee would like to see this expand amongst the membership in general, thus making membership more useful. Please send in any newscuttings, book and journal references, notes & observations via the Secretary - and let him know what sort of information you would like to receive as it turns up.

NASH COURT CAVE, MARGATE, KENT

A. F. Le Gear

There once existed an underground structure cut into chalk in the rear garden of Nash Court at Margate in Kent (N.G.R. TR 358 688). An inscribed stone, originally set in a nearby wall, recorded that in 1782 the entrance was arched over and covered with earth. (Building a brick arch and backfilling was a common method of making safe underground sites in the 18th - 19th Centuries. Many chalkwells are capped in this way.) In 1878 the entrance became accessible again and the site was visited by members of the Kent Archaeological Society, and a note published in Archaeologia Cantiana giving a sparse description.[1]

More recently the access was cleared by S. Luff with the help of some pupils of Abbey School in 1958. A few years later he re-visited the site with our member Deric Fuller who took photographs and measured the structure (see p. 15). On this visit it was found that the 18th Century brick vaulting had collapsed onto the entrance steps. Inside, a wall had fallen in revealing a tunnel which led towards a nearby cellar. This passage was a World War II addition, probably to utilise the case as an air-raid shelter. Fuller describes the site as follows:

> "This was a cruciform underground chamber cut in the chalk, about fifteen feet (4.57 m.) below the surface, with barrel vaulted roofs and a parabolic dome over the crossing; the whole of the walls, vaults and dome were lined with well-mortared chalk blockwork. There was an entrance stair, lined with the remains of very old, thin, brickwork, and also a blocked-up spiral stair that was supposed to be the original entrance. In one wall was an aumbry, with a rather unusual Tudor arch over it. There was also a low tunnel, just big enough to crawl along, which led off thirty feet (1.14 m.) or so until it was blocked by the foundations of modern farm buildings."

The original date and purpose of this excavation is not known. The author of the K.A.S. report of 1878 stated that it could be as early as the 15th Century or as late as the 17th Century, and that it may have been a secret oratory. In an article for the Everyman Arts Group magazine (1960) S. Luff infers that it was probably a chapel made under the oratory of Nash Court. H. Pearman[2] quotes an early edition of the Ward Lock & Co.'s Guide to Margate (c. 1905) which assumes that the cave was used as "a secret chapel in the days of religious persecution".

Sometime between 1878 and 1958 the inscribed stone giving details of the entrance was removed and found its way to the lawn of Thorne Manor, near Pegwell, Kent.

In the 1960's a number of collapses filled the site and it is once more inaccessible.

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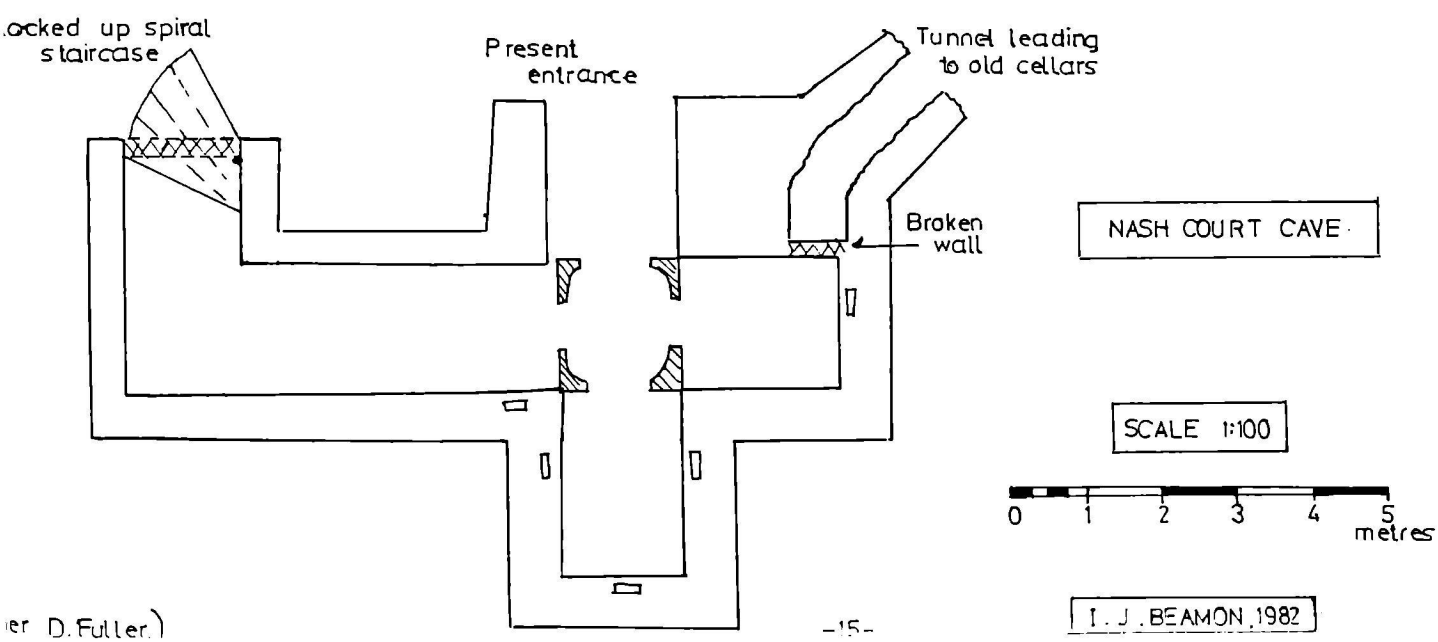
Photograph: Left to right, S.G.A. Luff, Deric Fuller, Leon Fuller c.1960.

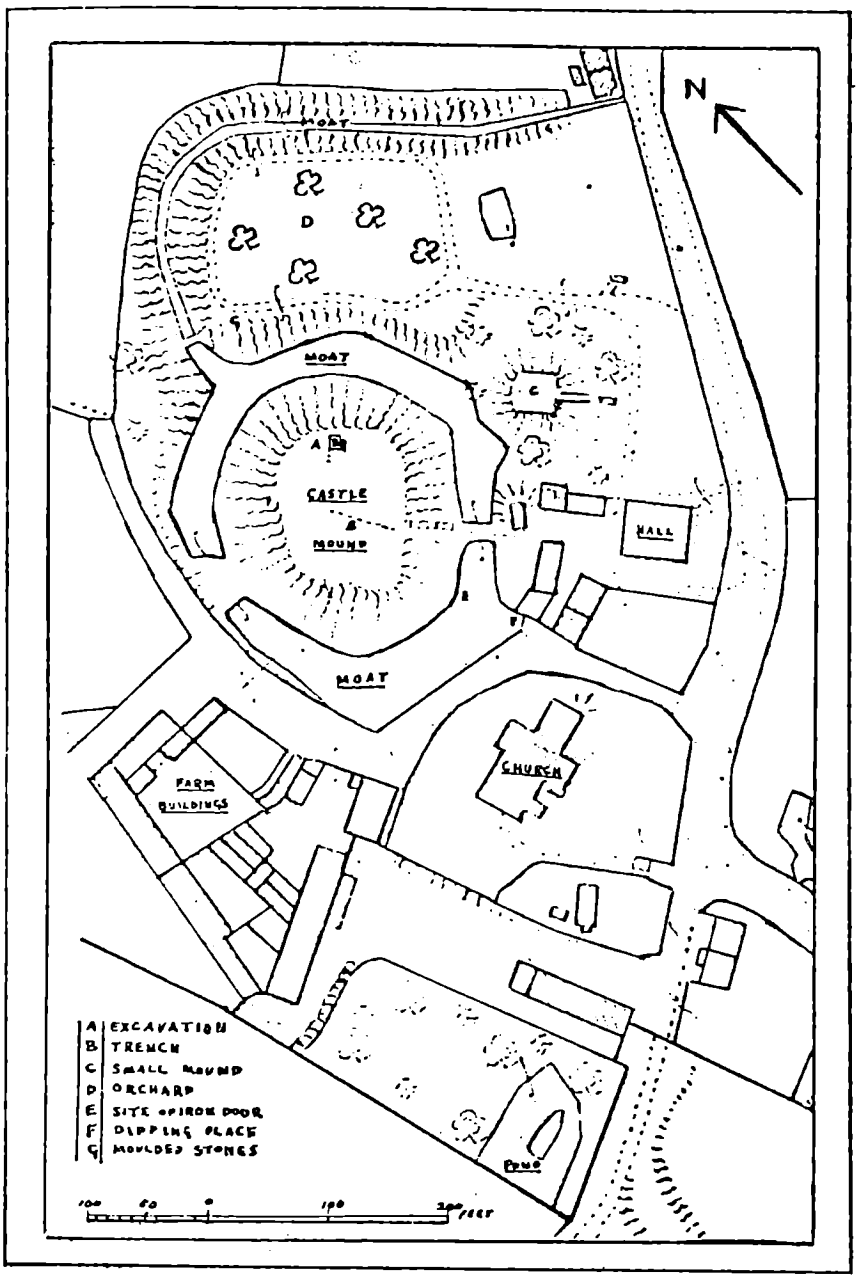

ocked up spiral
staircase
Present
entrance
Tunnel leading
to old cellars
Broken
wall
NASH COURT CAVE
SCALE 1:100
0 1 2 3 4 5
metres
I. J. BEAMON, 1982

er D. Fuller.)

ANSTEY CASTLE MOUND, HERTS. INTERIM REPORT 1981

Sylvia P. Beamon, Tom Doig and Paul Jones (Hatfield Sub Aqua Club)

East Herts Arch. Soc. Trans. Part II, Vol. 2.



SITUATION AND EARLY HISTORY

Anstey Castle motte and bailey (TL 404329) is situated immediately north of the parish church. The large flat-topped mound is 34 ft. (10.37m.) high. A moat surrounds most of the mound except where there is an L-shaped bailey to the east, near Anstey Hall itself. Two smaller mounds (E) and (N.E.) exist, the latter encompassed by a narrow moat branching out from the first. The Castle moat varies considerably in depth and becomes a mere trickle to the west, most of the time, and dries up in this area in the summer. Reputedly, the Castle was built by Count Eustace de Boulogne, Domesday owner of the Manor.

In 1218 Nicholas de Anstey was ordered to demolish his Castle and it is noted that in 1225 the property was in Henry III's hands.

BRIEF COMPARATIVELY MODERN HISTORY.

Several villagers even today are sure that a tunnel exists from the Castle to a place called Cave Gate over a mile away, and maintain that after a fall of snow when it melts a line can be seen across the fields towards the Castle from Cave Gate. There is a legend that a blind fiddler named George and his dog entered the tunnel at Cave Gate. The fiddler never returned but his dog emerged tailless and with every vestige of hair "singed off". In 1904 an elderly man named Skinner found a cave going in the direction of the Castle, however, it has since been considered that it was a chalk heading into the side of the hill to obtain chalk. This 'cave' was surveyed in 1965 by Mr. W. R. Kemsley and further investigated by Mr. T. Faulkner and a colleague in that same year or early 1966. It seems that the structure was in its entirety and a passage did not run to the Castle. (Ref: Subterranea Britannica Bulletins 4 and 7). The 'cave' has since been filled-in.

For over a hundred years there have been consistent reports of the existence of a pair of buried iron gates in the Castle moat. They are mentioned in Andrew's archaeological report of 1902 and William's (1929) book - Anstey - a Hertfordshire Parish. Since that time a gate has been seen by several eye witnesses

still alive today, in particular, in October 1944 when a B17 USSAF bomber crashed onto the mound, exploded and nose-dived into the moat. When the moat was drained to retrieve the bodies of the crew and unexploded bombs, it also revealed the whereabouts of the gate of which only about 18 ins - 2 ft. (.45m. - .61m.) in depth was visible. The last known sighting was in 1947 or 8 when again the top portion was seen during a summer drought.

It was suggested by Andrews that the gates might prove to be an entrance to at least the dungeons of the castle "deepest dungeon beneath the castle moat", which in the past has been denominated a "den of robbers".

From the geological formation of the mound (Andrews 1902), not formed by the material from the moat but consisting of top soil, two layers of boulder clay, interspersed with a flint layer then finally chalk, it is more than possible that an internal working exists comparable with the Baron's Cave under the castle remains at Reigate, Surrey (TQ 252 504) (see p.21) situated in Folkstone Beds of the lower Greensand. Both castles were built by French noble men and both geological formations are suitable for excavation. Internal workings in mottes in France are not uncommon and a good example is at Motte de Monsavignac, commune de Courliac 47. (See p.21 for plan - scale not known)

INVESTIGATION

Since Subterranea Britannica is interested in man-made and man-used underground structures it was decided that an investigation should take place. Permission was granted by the DoE and the farmer Mr. F. Oldenburg, who also has given us every assistance for which we are most grateful. The search for the gate by members of the Society together with two sub-aqua divers of the Bristol Exploration Club commenced in the late spring of 1979. The map of Andrews (p. 16) was used but nothing was located. From eye witness accounts, it seems the area of sightings was opposite the entrance to the churchyard approximately, 60 ft. (18.30 m.) to the south. Finds consisted of pieces of the bomber which have been examined at the Duxford War Museum. The divers were hampered by overhanging vegetation, including briars and thick tree roots, which stretched right down into the moat bottom. It was established that a flint and clunch double wall with a rubble filled cavity between existed in most of the area under investigation, and lying approximately 4 ft. (1.22 m.) below the water surface. Again tree roots were growing within and without the walls.

The season for investigation is short as the water becomes too cold for the divers to work in for any length of time.

In the summer of 1980 the team was joined bymembers of the Hatfield Sub Aqua Club who also had a boat which greatly assisted with the surveying work. It was then possible to use an underwater metal detector, however, that only brought to light more aircraft pieces. A large amount of the vegetation was cleared away from the mound.

The investigation of 1981 started late due to the very cold spring and a priority was the removal of more vegetation. Even with this assistance the divers still could not probe sufficiently for the gate. The possibility of draining the moat had been previously mooted, but the Fire Brigade said it was not allowed since the moat was an emergency water supply for the village, not only that, the Anglia Water Board would object also to such a large quantity of water entering their surface water drains.

After several discussions it was decided to propose the lowering of the water in the front of the moat, where the investigation was progressing, and moving it to the back; displacement rather than drainage. Depths of the water were taken, together with measurements of the surrounding moat and a Civil

Engineer calculated that there was about 250,000 gallons (1,136,491 litres) of water. A dam was built across the narrowest area in the south west, and after difficulties in obtaining a suitable pump were overcome, on Sunday, 4th October, 200,000 plus gallons (909,193 litres) of water was pumped to the other side of the moat by Fire Engine pumps voluntarily operated by S.E.C. Fire Protection Ltd. (producers of artificial rain for television etc.) The water dropped to the level of the wall. (A sludge pump will be necessary to lower it still further on a future occasion.) The gate was not found but it is now likely to be completely covered with the silt built up over many years. As far as it can be ascertained part of the moat was last cleaned out in 1921 when the gates were seen; how much was actually visible is not known. It is recorded that c.1860 they were about 5 ft. (1.52 m.) in depth and 4 - 5 ft. (1.22 m. - 1.52m.) in width, appeared to be very thick with a heavy bar across them and possibly fastened with a padlock.

COMMENTS:

It will be noted that the old reports state "gates" and the eye witnesses "gate". There was another gate* on the bank near the church illustrated in Williams' book. Unless seen at close quarters, the gates against the mound probably appeared as one.

It is considered a possibility that at one time the water may have been considerably shallower, therefore the wall and the gates likely to have been exposed. It seems rather a lot of trouble to have constructed a double-wall to be beneath the level of the water! Within living memory the level was lower as the moat supplied domestic water for the Hall and the farm animals were watered there.

Mr. Oldenburg has kindly agreed that the investigation may continue next year.

December, 1981.

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* FOOTNOTE:

The original photograph has since been located in the Hertford Record Office and an enlargement obtained. The photo shows that the 'gate' is in fact a water pumping device.

Anstey Castle Mound (Cont'd)

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THE UNDERGROUND PASSAGES OF TIVERTON CASTLE, DEVON

Sheila Campbell

Subterranean passages always exercise a strong attraction, and it is tantalising that today so little remains of the network of escape routes-cum-drains that undoubtedly lies beneath the fortress of Tiverton.

Certainly, one can still walk round the west curtain wall on the river-side and enter an arched opening at the base of the central bastion known as the Garderobe Tower. One can squirm up a narrow rising ramp into an arched chamber with three blocked exits. Above is a shaft which once would have connected with the mediaeval lavatories, or garderobes, probably on two floors, from which the tower gets its name. The shaft, now ending in the flat truncated curtain wall, was partially covered over in the 1890s by the Carews, who placed a heavy flagstone there, with their name carved on it.

In August 1862, the British Archaeological Association held its A.G.M. at Exeter, and on the 23rd, visited Tiverton Castle. A Dr. Paterson read a paper on the building, with many protestations of his lack of technical knowledge of architecture and archaeology, and of being more or less press-ganged into performing a task which no-one else would undertake.

He describes the garderobe tower entrance, and states, "Several persons now living have entered the chamber by that way, and describe it as a lofty apartment, at the far end of which were three rude archways blocked up with rubbish. One man informs me that he actually penetrated some way in the direction of the C.E. tower (where the mediaeval lavatory on the first floor still exists, this passage being its drain) until stopped by rubbish that had fallen in; and a few years ago, an excavation was made in the lawn, about 10 feet (3.04 m.) from the bastion, which exposed the remains of a vaulted way apparently branching in two directions, but the quantity of rubbish deterred them from exploring further."

In time of attack, exits tunnelled far beyond the castle walls would have been invaluable. One must remember that the enclave was much larger then. The outer court probably extended to Castle Street, with the tilting yard still commemorated in Hit and Miss Alley alongside the present Castle Place. The Church, too, was included in the fortifications which may well have extended some way down St. Peter Street. The wells still existing in the gardens of the houses on the west side are very old and would have been invaluable in time of siege. Lack of water was always a hazard, and Exeter fell to Stephen for want of it. There may also have been further fortifications at the end of St. Peter Street, nearer the ford over the Exe, for it is said that the high pavement on Angel Hill used, till the last century, to be called the Ramparts.

I am indebted to Mrs. C. Whitton for providing some fascinating notes on escape routes written in 1919 by Miss Daily Skinner. She refers to a highly important passage existing at the base of the Chorle, below St Peter's Church. This burrowed under the churchyard, came up beneath the C.E. round

tower (where the steps leading down to it still exist); then branched under the moat to Bampton Street, where it turned just above Pinkstone's Court and passed under the houses above the Boar's Head, exiting in Gold Street, somewhere between the Cross Keys and the Red Lion, bringing it close to the Lowman ford.

She states, "This is the route described to me by my father in 1900, and they heard it from their forefathers. Research threw light on the course of this route and why it was taken. It has also given a clue to the date of its construction. The passage must have been made before the reign of Edward II, for the Tax Toll of that date shows the Earl of Devon had consolidated his possessions and gained the upper portion of that East side of Bampton Street as far as Houtes House, which had previously belonged to Manger le Braunt as Lord of the Manor of Pool Anthony, a Manor which was much interwoven in the early Courtenay possessions of our present town. The Tax Bill proves that the Earl had the Manor of Westleigh. A further confirmation is given of this route, for in the gardens of the houses above the Boar's Head Inn, there was said to be a spot where turf would not grow. Tradition says it was connected with the secret way, possibly an old ventilation shaft. Workmen built solidly in those days, and used a liquid mortar called groat."

The Chorle passage was undoubtedly very important, for to the south, messengers could be sent to the Collipriest ford and vassals could be summoned from as far as the Earl's Barony of Okehampton. The Lowman exit could get help secretly from his Somerset Manors.

Miss Skinner adds, "Mr. Skinner, who was born in 1819, told me the last attempt to explore it was made when he was a boy, and he was present when a dog was put in at the Chorle entrance, and as it did not return, it was considered too dangerous to penetrate and the idea was abandoned."

In 1970, a team of R.A.F. potholers came and spent a week in a caravan at the Castle, supremely confident that they could penetrate some of the underground passages. They put on their frogmen suits and were lowered into the bowels of the lavatory in the S.E. tower, and they struggled with the debris in the blocked passages under the garderobe tower. But alas, they were beaten. The excavations were too dangerous, and they never even found an old coin.

So the labyrinth of passages, constructed with so much labour over the years in the past, seem likely to remain undisturbed, with the cost of excavation at its present exorbitant figure.

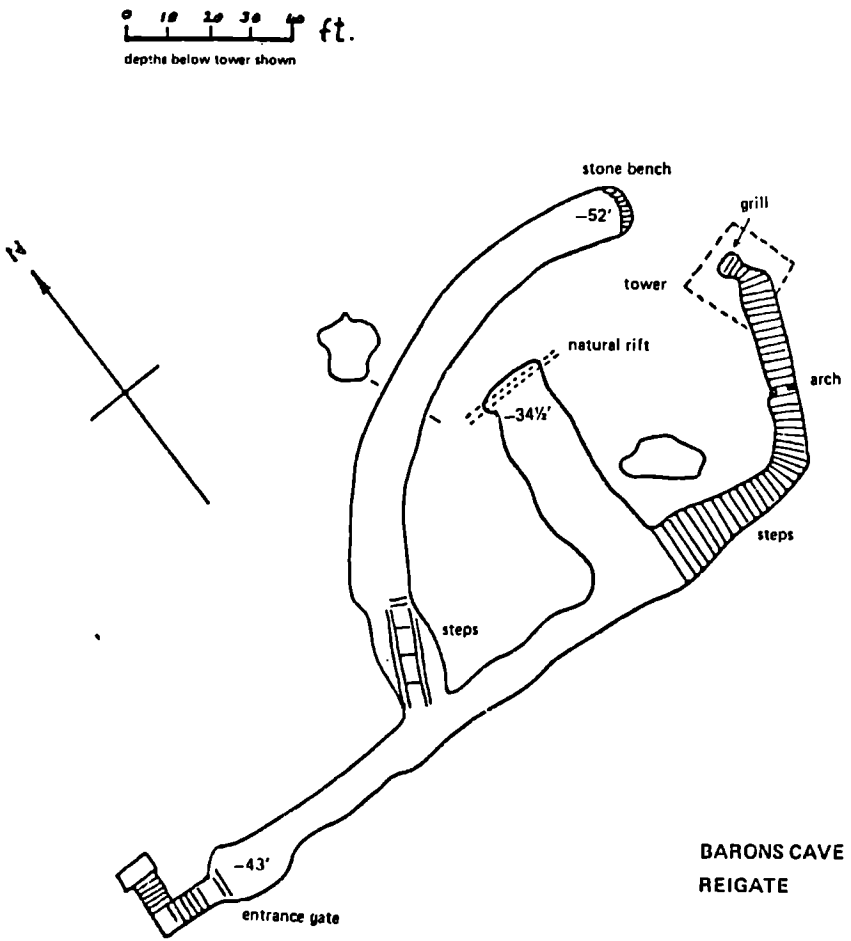
This article has been reproduced from The Tiverton Civic Society Newsletter 8, for March, 1981 with their kind permission and that of the authoress. We are informed by Mrs. Campbell that Mrs. Skinner's notes were only hand-written and never published as far as she knows. They seem to have been taken down simply to put on paper an oral tradition.

THE WEST SUSSEX GEOLOGICAL SOCIETY

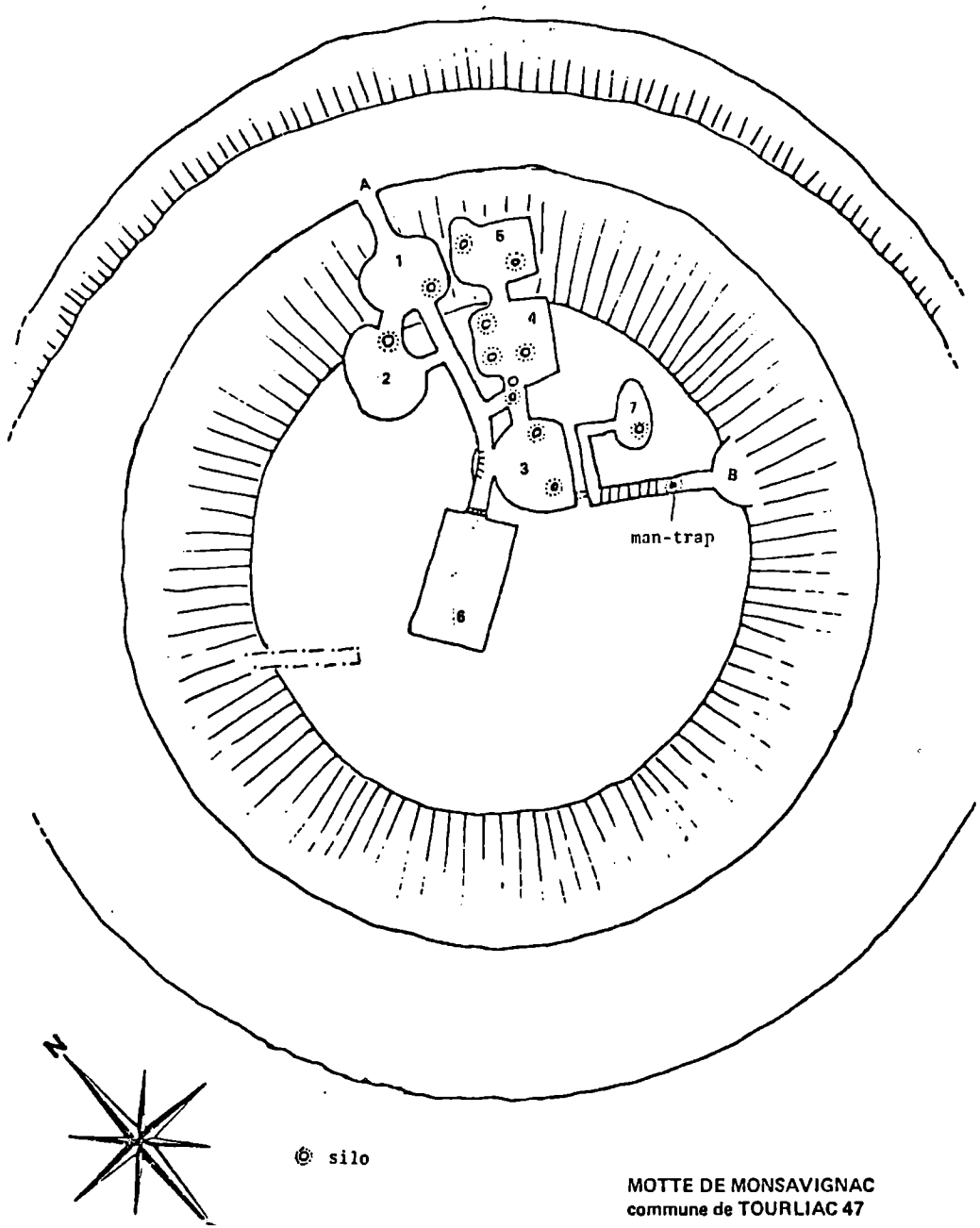
The above Society have just issued the first edition of West Sussex Geological Journal, May 1982. Contents: Quaternary Geology in Sussex - Problems and Possibilities - John Boardman; Sedimentary Cycles in the Tertiary Strata in S.E. England; A Check List of the Common Fossil Shells from the Barton Beds; Bracklesham for Beginners - Roger Cordiner; Collecting Small Fossils at Bracklesham Bay; Notes on Collecting from Soft Clayey Sands and Clays - Mike Goodchild; Notes taken at the lecture on "Thames, Estuary and North Sea Deposits" - Rene Streeter. Copies obtainable at a cost of £3. plus 30 p. post. from R. W. Robelou, 14 Halsbury Road, Worthing, West Sussex, BN11 2JP.

Ref: Subterranea No. 35, 1980 (3), pp. 119-122

Ref: Reigate – Baron's Cave. Secret Tunnels in Surrey, Records Vol: 3 of the Chelsea Speleological Society (Reprint 1977) pp. 46 – 52



BARONS CAVE
REIGATE



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